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(please excuse cross-postings)

A new study in the International Journal of Occupational Environmental Health reports increased cancer and neurological health risks from cell towers. Vini Khurana (Australia, neurosurgeon) and Lennart Hardell (Sweden, oncologist) have published a summary of ten studies that reported health effects of populations living near cell towers. They found risks for cancer and neurological disease in eight out of ten studies - within 500 meters of the cell antennas.

It is important to remember that not all cell tower antennas are the same, and the RF exposures around them can vary widely. Major macrocell sites can emit 6000 watts or more, and smaller sites can be less than 2000 watts. The distance outward from a cell tower that creates the 'zone of RF impact' needs to be assessed on a site-specific basis.

Abstract

Human populations are increasingly exposed to microwave/radiofrequency (RF) emissions from wireless communication technology, including mobile phones and their base stations. By searching PubMed, we identified a total of 10 epidemiological studies that assessed for putative health effects of mobile phone base stations. Seven of these studies explored the association between base station proximity and neurobehavioral effects and three investigated cancer. We found that eight of the 10 studies reported increased prevalence of adverse neurobehavioral symptoms or cancer in populations living at distances < 500 meters from base stations. None of the studies reported exposure above accepted international guidelines, suggesting that current guidelines may be

inadequate in protecting the health of human populations. We believe

that comprehensive epidemiological studies of longterm mobile phone base station exposure are urgently required to more definitively understand its health impact.

Key words: base stations; electromagnetic field (EMF); epidemiology; health effects; mobile phone; radiofrequency (RF); electromagnetic radiation.

The paper cites the BioInitiative Report findings and conclusions on the inadequacy of existing public health standards for cell tower radiation, and supports the BioInitiative Report recommendation (of 0.1 microwatt per centimeter squared) by citing new publications on cell tower risks.

"In August 2007, an international working group of scientists, researchers, and public health policy professionals (the BioInitiative Working Group) released its report on EMF and health.²¹ It raised evidence-based concerns about the safety of existing public limits that regulate how much EMF is allowable from power lines, cellular phones, base stations, and many other sources of EMF exposure in daily life. The BioInitiative Report²¹ provided

detailed scientific information on health impacts when people were exposed to electromagnetic radiation hundreds or even thousands of times below limits currently established by the FCC and International Commission for Non-Ionizing Radiation Protection in Europe (ICNIRP). The authors reviewed more than 2000 scientific studies and reviews, and have concluded that: (1) the existing public safety limits are inadequate to protect public health; and (2) from a public health policy standpoint, new public safety limits and limits on further deployment of risky technologies are warranted based on the total weight of evidence.²¹ A precautionary limit of 1 mW/m² (0.1 microW/cm² or 0.614 V/m) was suggested in

Section

17 of the BioInitiative Report to be adopted for outdoor, cumulative RF exposure.²¹ This limit is a cautious approximation based on the results of several human RF-EMF studies in which no substantial adverse effects on well being were found at low exposures akin to power densities of less than 0.5 – 1 mW/m².^{2,2,5,22–26} RF-EMF exposure at distances > 500 m from the types of mobile phone base stations reviewed herein should fall below the precautionary limit of 0.614 V/m."

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For distribution:

Hello Everyone,

As some of you already know, there are several students in Mountain View School in Collingwood, Ontario (Canada) who are complaining about ill health after the school installed WiFi. Rodney, a concerned father, invited me to give a talk in the Community this past week and the room was packed with parents, health care professionals, people from the community, and the media so I hope it will generate more interest once the articles begin to appear.

See video clip of interviews with some of the students at the school. [HYPERLINK](#)

["http://www.youtube.com/watch?v=h-](http://www.youtube.com/watch?v=h-TJXRc5fzo)

[TJXRc5fzo&feature=player_embedded"](http://www.youtube.com/watch?v=h-TJXRc5fzo&feature=player_embedded)[http://www.youtube.com/watch?v=h-](http://www.youtube.com/watch?v=h-TJXRc5fzo&feature=player_embedded)

[TJXRc5fzo&feature=player_embedded](http://www.youtube.com/watch?v=h-TJXRc5fzo&feature=player_embedded)

See video documenting tachycardia in adults during provocation with a cordless (DECT) phone.

[HYPERLINK](#)

["http://www.youtube.com/watch?v= EI9fZX4iww"](http://www.youtube.com/watch?v=EI9fZX4iww)<http://www.youtube.com/watch?v= EI9fZX4iww>

What is disturbing is that several students have complained about ill health, two students are now on heart medication and one young girl is scheduled for heart surgery on Monday June 14th. A student in a Toronto school (also with WiFi) fainted while standing in the hallway near a WiFi antenna. The students with heart conditions have been diagnosed with one of the following: vaso vagal syndrome, supraventricular tachycardia (SVT), or Wolff-Parkinson-White (WPW) Syndrome (abnormal connections or accessory pathways in the heart) a form of atrioventricular reciprocating tachycardia (AVRT).

Symptoms for SVT include: dizziness, shortness of breath, chest pain, a pounding sensation in the throat or neck, weakness, fatigue, lightheadedness, fainting (especially in the case of underlying heart disease) and resemble EHS symptoms.

Prevalence rate for tachycardia is about 1.6% to 2% for adults. [HYPERLINK](#)

["http://www.wrongdiagnosis.com/t/tachycardia/stats.htm"](http://www.wrongdiagnosis.com/t/tachycardia/stats.htm)<http://www.wrongdiagnosis.com/t/tachycardia/stats.htm>

Prevalence for WPW is 0.15% in children. See: [HYPERLINK](#)

["http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2363719/"](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2363719/)<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2363719/> Epidemiology of Arrhythmias in Children, by R Prem Sekar. Indian Pacing Electrophysiol J. 2008 Apr-Jun; 8(Suppl. 1): S8-S13.

I recently heard that all the schools in my district (Kawartha Pine Ridge) are going to have WiFi installed soon. Where are these schools getting information that this technology is safe? I find this situation most disturbing. If these heart conditions are related to WiFi then I think the schools and those who make the statement that this radiation is safe (Health Canada and local Health Boards) are culpable.

Have received emails from several of the people who attended the presentation this past week and learned that some parents are also having heart palpitations and rapid heart rate because of WiFi in the home. They didn't know this was contributing to their heart problems and have, since the talk, disconnected their wireless devices.

Why are doctors not better informed? Anyone who suddenly experiences a heart irregularity should be asked some specific questions about whether or not they have wireless routers, cordless phones, energy efficient CFL bulbs, nearby cell towers, etc. as routine questioning.

The heart problem (arrhythmia or tachycardia), which can be easily measured, may be a very important test for those who are EHS. Please spread the word and ask your friends if they experience symptoms of an irregular or racing heart and if they do ask them when it started, what changed at that time, if it is occasional-when they experience it and what they are doing about it. The more information we can gather the more impact it is going to have on school boards. Getting rid of WiFi is more difficult than preventing it from being allowed into a school in the first place.

Please distribute this email to your friends and let's get a better understanding as to how widespread this heart problem is and the degree to which it relates to wireless technology and electrosmog exposure.

Thanks for your help,

-magda

There is strength in numbers!

I am attaching and posting below our July 11, 2010 Telecommunication Taskforce Update.

Hundreds of residents came out to voice their concerns about the recent proposals to install T-Mobile antennae and/or towers at the North Merrick Library, North Bellmore Fire Department and the Farmingdale-Wantagh Jewish Center. And the MOMS of Merrick and Bellmore are really kicking up steam at school board and civic meetings. But I'd like to give special thanks to Legislator Dave Denenberg – who has been the people's advocate in the fight against cell towers near our homes and schools and a proponent for finding better locations. As the common thread among all the communities, I believe we need to work with Leg. Denenberg's office and unite to form one strong voice against the inundation of wireless telecommunication installations in all our communities.

I would also like to thank the Town of Hempstead for writing new code to address these concerns and Senator Fuschillo for looking into better locations on state property. We are very lucky to live in communities that have representatives like Legislator Denenberg and Fuschillo looking out for the best interests of the people. I am happy to see our state,

county and town government working together in a bi-partisan manner to address this problem.

And with the history and experience of the North Bellmore residents; the passion and determination of Pam Naughton and Lori Stehl and public relation skills of Jeanine Stehl of Wantagh; the perseverance and commitment of Jodi Turk and Sharon Curry who founded MOMs; Attorney Andrew Campanelli, who is giving his time and experience to fight these cell towers; the members of the Taskforce, which include Joe Baker from the South Merrick Community Civic Association, Ira Harris from the East Bay Civic Association and the people who have been putting in hours of their time; and the public outcry from the Wantagh, North Bellmore and North Merrick communities over the new cell towers – I believe we are really a force to be reckoned with. A united community can accomplish anything!!

Please review the attached update that is also posted below and look out for more emails in the next few days. We will need to meet to stop the new cell towers from being installed.

Telecommunication Taskforce Update

July 12, 2010

By Claudia Borecky

It is over a year since the invasion of cellular antennas on utility poles in Merrick and we find ourselves in the same position that we were in then. The cellular antennas are still there; the Town of Hempstead should still be held accountable for not protecting its citizens; and we are still in a position where we could negotiate their relocation. Only now, we have new companies proposing to erect cell towers at our libraries, synagogues and fire houses. Swift action must be taken to prevent these new towers from being erected.

There are three locations where T-Mobile is proposing to install different types of wireless telecommunication equipment:

1. North Merrick Library

North Merrick Library Director Tom Witt advised the North Merrick Community Association (“NMCA”) of T-Mobile’s proposal to erect a 50’ flagpole cell tower to replace the old rusted flagpole that stands in front of the North Merrick Library. He invited T-Mobile representatives to the NMCA’s June 21 meeting to discuss their proposal. Several people expressed their outrage at the thought of a cell tower at a library. I questioned whether T-Mobile would consider installing the tower only a short distance away on the Meadowbrook Parkway. T-Mobile rep Tom Erwin said that it was an arduous process to deal with the state’s regulations. I called and wrote Senator Fuschillo and Assemblyman McKeivt requesting that they investigate these applications and see if state property along the highways might be better locations for cell towers than near our homes, schools and libraries.

Senator Fuschillo opposes this cell tower and is requesting Crown Communication (the company contracted to manage wireless telecommunication equipment along the state highways) to provide us with its procedure for approving cell tower installations. **With Senator Fuschillo’s help, I am hopeful that not only will we be able to find a better location for the North Merrick Library site, but for the Farmingdale-Wantagh Jewish Center site as well.**

If we install cell towers along the highways, it is my hope that these larger poles will

cover larger areas and we will be able to take down the cell antennas that are on nearby utility poles and place them on these poles.

If you are interested in reading my opinion piece on this cell tower, please go to **HYPERLINK "<http://merrick.patch.com/articles/borecky-who-wants-to-pledge-allegiance-to-a-cell-tower>"<http://merrick.patch.com/articles/borecky-who-wants-to-pledge-allegiance-to-a-cell-tower>**.

2. North Bellmore Fire Department at Newbridge Road and Columbus Avenue

A hearing is scheduled by T-Mobile at the Town Board of Zoning Appeals (BZA) for Wednesday, July 14 to hear T-Mobile's request to install six wireless communication antennas concealed inside a proposed 100-foot high monopole and equipment cabinets on the ground at 847 Newbridge Road, on land owned by the North Bellmore Fire Department, Engine Company #2 location, at Columbus Avenue, across from East Meadow Avenue.

On June 30, 2010 the North Bellmore Fire Dept. held a meeting to give the residents a chance to voice their concerns regarding this cell tower. Angry residents demanded that they find a better location. T-Mobile representatives did not show. Senior Deputy Town Attorney Charles Kovit said that their consultant will look over to see if T-Mobile did everything it could to find a better location for this tower.

I met with Leg. Denenberg and some North Bellmore residents who are opposing this tower and discussed uniting to fight the three T-Mobile cell tower locations. There are strength in numbers and with the help of Leg. Denenberg, we will organize a united front to fight these T-Mobile applications.

Leg. Denenberg is requesting an adjournment of that hearing and will send a representative to the BZA to make sure that it is adjourned.

3. Farmingdale-Wantagh Jewish Center

On the same date as the hearing for the North Bellmore Fire Department cell tower site, the BZA is also scheduled to hear T-Mobile's request to install six antennae on the outside of the Farmingdale-Wantagh Jewish Center's chimney, **3710 Woodbine Avenue, Wantagh, NY** which stands at approximately 35' tall.

T-Mobile representatives held a meeting at the Wantagh Knights of Columbus on Wednesday, July 8, 2010. Pam Naughton, Jeanine Boiko and Lori Stehl spread the word throughout the neighborhood. Approximately 150 angry Wantagh residents attended that meeting to protest these proposed cell antennae. This drew TV media attention with News 10/55 and News 12 interviewing Wantagh residents, Leg. Denenberg and me at the Knights of Columbus meeting and at a prior meeting the week before at a resident's home where 50 people attended.

The Wantagh residents also feel that we need to unite. **The Telecommunication Taskforce is working with Leg. Denenberg, the Wantagh, North Bellmore and North Merrick residents and the MOMS of Merrick and Bellmore to fight these proposed cell towers.**

Town of Hempstead

One of the main objectives of the Telecommunication Taskforce ("Taskforce") is to prevent the inundation of wireless telecommunication equipment in the Town of Hempstead ("Town"). At the Taskforce's first meeting in early March 2010, it was decided that we would again sit down with the Town and work with them in establishing code that would prevent the future proliferation of cell antennae. After several

conversations that both Joe Baker, President of the South Merrick Community Civic Association ("SMCCA"), and I had with Attorney Kovit, we were advised that the town is retaining a consultant to write its code. On behalf of the Taskforce, I submitted provisions that we would like to see adopted in the new ordinance.

At about the same time, Jodi Turk and Sharon Curry formed MOMS ("Moms of Merrick") to fight the cell antennae near the Merrick schools. They then retained Attorney Andrew Campanelli, an attorney who had instituted a suit in Bayville against cell antennae that were installed on top of a water tower near a school. Attorney Campanelli has also opened conversation with the Town and will have input into the Town's wireless telecommunication code.

Legislator Denenberg suggests we urge the Town to establish a moratorium of the approval of permits for the installation of cell towers and antenna. This is an urgent matter that demands our immediate attention. We must prevent these new applications for cell towers from being approved.

New York State

Attorney Campanelli is looking into NextG's status as a public utility and is working toward getting the cell antenna off the utility poles in front of people's homes and schools.

The Taskforce is working with Senator Fuschillo to seek alternate sites for the cell towers and antennae. Another Taskforce objective is to work with the state legislature in revising legislation that restricts local control of wireless telecommunication installations and examining the criteria for public utility designation. We FOILED for documentation that will help us fight the cell phone companies.

U.S. Government

The Telecommunication Act of 1996 prohibits the denial of wireless telecommunication equipment due to health risks associated from radio frequency emissions if it falls within federal standards. This act clearly protects cell phone companies from being sued for claims of illnesses or deaths. However, it does not say that you cannot deny applications based on other reasons, such as reduction of property values.

In any event, as new studies have been conducted with data the Taskforce will ask our U.S. Congressmen and Senators to revisit the Act to protect its citizens, instead of its cell phone companies. I've mentioned this to both Senator Schumer and Congresswoman McCarthy and hope to work with our representatives, asking them to introduce legislation to revise the Act.

I am deeply moved by the compassion and understanding that the people of our communities are showing toward their neighbors who have these cell antennas right outside their children's bedroom windows, just feet away from their children's schools and dangerously lurking outside homes of people who have health concerns. Whether it is a line or two, a signature on a petition online or on paper, or actively volunteering their time and energies in pursuing this fight, it is truly commendable that a community is coming out in support of its neighbors and a testament to what can be accomplished when a community stands united.

"Never doubt that a small group of thoughtful, committed, citizens can change the world.

Indeed, it is the only thing that ever has." — [HYPERLINK](#)

http://www.goodreads.com/author/show/61107.Margaret_Mead"Margaret Mead

To learn more about the history of cell antennas in Merrick, to examine pertinent

documentation, or if you are interested in learning more about the Taskforce, please visit [HYPERLINK](#)

["http://www.northmerrickcivic.com/"](http://www.northmerrickcivic.com/)www.northmerrickcivic.com or call Claudia Borecky at 516-972-6988.

Please also visit the MOMs site at [HYPERLINK](#)
["http://www.dontcellout.com/"](http://www.dontcellout.com/)www.dontcellout.com to get the scoop on what communities are doing to fight this intrusion of wireless telecommunication equipment.

Claudia Borecky Telecommunication Taskforce 972-6988

from Talal (filmmaker)

It's been a while since we updated you with the news of Full Signal, and that certainly hasn't been for lack of activity.

The Wireless industry has been in a flurry ever since the Interphone Study (which they sponsored 50% of) cast even more doubt into the safety of wireless technologies.

They were even more shocked when San Francisco passed legislation to make Standard Absorption Rate information more prominent for people buying cellphones.

Since we last wrote, Full Signal was shown to Congressional Staff in Washington, DC, it was a finalist at the Anasy Documentary Awards in Abu Dhabi, and we have had several community screenings.

We have kept up our media campaign in outlets such as the Huffington Post, etc.

The awareness campaign continues!

For us, Full Signal has turned over a new leaf. One that many of you have been waiting for: the release of Full Signal on DVD!

What makes things even more exciting is that since making the DVD announcement a couple of weeks ago on our [HYPERLINK](#) ["http://www.facebook.com/pages/Full-Signal/172006015778?v=app_4949752878&ref=search"](http://www.facebook.com/pages/Full-Signal/172006015778?v=app_4949752878&ref=search)[Facebook Page](#), we have literally sold hundreds of DVDs, and are already manufacturing more!

You can buy the Director's Cut DVD by going to FullSignalMovie.com and clicking the [HYPERLINK](#) ["http://dvd.fullsignalmovie.com/catalog"](http://dvd.fullsignalmovie.com/catalog)[DVD Tab](#) or by linking through this e-mail.

Once there you will find 5 different products:

Americas DVD. This DVD is NTSC format and although it is meant to be played on the American continents, we have not limited its region playability. This DVD comes with 3 languages built into it: English, French and Spanish (including full English subtitles for the hearing impaired).

Worldwide DVD: This DVD is meant to be played everywhere else in the world. This is a PAL DVD and is not restricted to any one region. In addition to the languages above, we have added Arabic, German, Italian, and Swedish to this version [thanks in no small part to the diligence and hard work of some very dedicated volunteers!]

While the Americas DVD is already being shipped, we are currently taking advanced orders for the Worldwide DVD (which will begin shipping next month).

There are some great volume discounts (so if you and your friends want copies buy them

together). There are also one-off offers that we will post on our Facebook Page under the DVD Tab.

The 3rd option under the "Home DVD" section is the Awareness DVD. This is exactly the same DVD you would buy to watch at home, but is intended to be used to raise the awareness of politicians, the media, etc. We're offering it at a 40% discount off the price of the regular DVD, because after all this why we made the film (the one condition is that we mail it directly to the politician/media outlet in question).

We have also facilitated the screening option by including 2 different screening fees depending on the size of the audience. We just had a successful test of this system last Friday with a screening in Calgary (Canada) attended by about 75 people.

So at this point, I want to thank all the volunteers for the countless hours they put in to making this DVD possible. And I also want to thank all those who have purchased copies of the DVD so far.

For those of you on Facebook who have seen the DVD, please be so kind as to write a review by clicking on the review tab.

Our very best to all of you!

Talal Jabari

Talal Jabari

Director

Full Signal (2009)

"AUDIENCE AWARD" 4th Gasparilla International Film Festival, Tampa, FL

"AWARD of MERIT" Accolade Competition 2010

"BEST DOCUMENTARY" 5th Myrtle Beach International Film Festival

"FINALIST" 2nd Anasy Documentary Awards, Abu Dhabi, United Arab Emirates

"OFFICIAL SELECTION" 15th Vilnius International Film Festival, Vilnius, Lithuania

"OFFICIAL SELECTION" 7th Big Sky Documentary Film Festival, Missoula MT

"OFFICIAL SELECTION" 18th Environmental Film Festival, Washington DC

"OFFICIAL SELECTION" 10th Santa Fe Film Festival

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I am completely and vehemently opposed to eliminating landlines. Research on the risks to public health from an over-saturation in the environment of low-level continuous EMF radiation is quite compelling. Cell phones and cell antennas are one source of this danger, and the 'Precautionary Principle' recognized by the European Union and the Bioinitiative Report should be heeded in making any decision regarding the possibility of making the public depend entirely on cell phones. Please do not allow this to happen! We do not want to wait for the corpses to roll in to make a decision that enough research exists regarding spikes in cancer rates in communities located near a high density of cell antennas to warrant maintaining landlines as a permanent alternative to cell phones for the general public... See "Full Signal," a documentary made by Talal Jabari, to hear from scientists internationally on these dangers.

Press Release

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Risks of Brain Tumors Among Cell Phone Users Underestimated in Interphone Study, Says International EMF Collaborative

***Data for Acoustic Neuromas and Salivary Gland Tumors,
Located Closest to the Ear, Were Not Published—Group Asks for Full
Disclosure and Urgent Research on Cell Phone Risks for Children***

Berkeley, CA and Sutton Coldfield, England, May 17, 2010. Authors of the report, “Cellphones and Brain Tumors: 15 Reasons for Concern, *Science, Spin and the Truth Behind Interphone*” have released a technical analysis of the long-awaited Interphone Study published today in the *International Journal of Epidemiology*. **Download Report:** HYPERLINK "<http://www.radiationresearch.org>" www.radiationresearch.org.

Despite the Interphone Study Group’s long-awaited acknowledgment of increased risk of brain cancer among long-term, heavy users of cell phones, the International EMF Collaborative says the study’s design results in serious underestimation of risk of brain cancer.

The 11 key design flaws were fully detailed in the group’s landmark report last August (HYPERLINK "<http://snurl.com/wdgbd>" <http://snurl.com/wdgbd>). One example was that individuals using cordless phones but not cellphones were considered ‘unexposed’ for purposes of the Interphone analysis, though exposed to the same radiation as cell phones.

The results published today appear to show that in many cases use of a cellphone *protects* users from brain tumors, but this is a reflection of the design flaws, according to Lloyd Morgan, B.Sc., lead author of “*Cellphones and Brain Tumors: 15 Reasons for Concern*”. Other issues with the Interphone study, he says, include:

Results were only provided for brain cancers (gliomas) and meningiomas, but not tumors within the 20% of the brain's volume irradiated by cell phones.

Risk was not broken down by gender, which may have obfuscated even higher risk of meningiomas in women.

The 5-year old results are woefully inadequate as a gauge of risk today, as adults and children now speak on cell phones many hours a day compared to only 2- 2 ½ hours a month at that time.

Eileen O'Connor, Director of the Radiation Research Trust and member of the International EMF Collaborative, says "Four billion people own mobile phones worldwide, many of those users are children. Responsible governments must advocate for public transparency of risks so that an informed public may have more options to exercise precaution".

**VIDEO - INTERPHONE DESIGN FLAWS WITH L. LLOYD MORGAN, B.Sc. –
COMING SOON - HYPERLINK "<http://vimeo.com/8109152>"
<http://vimeo.com/8109152>**

XXX

Cell Phone Radiation Science Review on Cancer Risks and Children's Health



Cell Phone Radiation

Science Review on Cancer Risks and Children's Health

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ewg.org/cellphoneradiation/fullreport

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Cell Phone Radiation Science Review

Executive Summary

More than 4 billion people around the world use cell phones (ITU 2009). Because cell phone technology has been around for just two decades, scientists do not yet fully understand long-term health risks from cell phone radiation. But recent research has prompted serious concerns about exposure to wireless emissions.

Prior to 2003, studies of cancer risk and cell phone use produced conflicting results. FDA told consumers that scientists had found no harmful health effects from exposure to cell phone emissions. (FDA 2003).

But FDA's assurances were based on studies of people who had used cell phones for just 3 years, on an average (FDA 2003), not long enough to develop cancer. At that time, studies had not addressed the risks of longer-term exposures.

The research gap is closing. Scientists around the world have recently associated serious health problems with using cell phones for 10 years or longer:

- A joint study by researchers in Denmark, Finland, Norway, Sweden and the United Kingdom found that people who had used cell phones for more than 10 years had a significantly increased risk of developing glioma, a usually malignant brain tumor, on the side of the head they had favored for cell phone conversations (International Agency for Research on Cancer (IARC) 2008; Lahkola 2007).
- French and German scientists reported an increased risk of glioma for long-term cell phone users (Hours 2007; Schuz, Bohler, Berg 2006). Analysis of all published cell phone-brain tumor studies found that people who had used a cell phone for 10 or more years, the overall risk for developing a glioma on the cell phone side of the head increased by 90 percent (Hardell 2009; Kundi 2009).
- Cell phone use for 10 years and longer has been also associated with significantly increased risk of acoustic neuroma, a type of benign brain tumor, on the primary side of cell phone use (IARC 2008; Schoemaker 2005). An extensive review of published studies of acoustic neuroma found that long-term cell phone users had a 60 percent greater risk of being diagnosed with the disease (Hardell 2009; Kundi 2009).
- A study from Israel reported an association between frequent and prolonged mobile phone use and parotid (salivary) gland tumors (Sadetzki 2008). Scientists analyzing data from Sweden and Denmark combined found that people who had used cell phones for at least 10 years ran an increased risk of benign parotid gland tumors (IARC 2008; Lonn 2006).
- Multiple studies reported that the brains of young children absorb more radiation than those of adults (de Salles 2006; Gandhi 1996; Kang 2002; Martinez-Burdalo 2004; Wang 2003; Wiart 2008), potentially rendering them more vulnerable to brain tumors (NRC 2008b). Researchers in Sweden found the highest risk of brain tumors among people who started using cell phones during adolescence (Hardell 2009).

Recent studies link cell phone radiation to:

Brain cancer: Two analyses of 25 original publications identified a 50 to 90 percent increase in risk for two types of brain tumors: glioma and acoustic neuroma (Hardell 2009, Kundi 2009).

Salivary gland tumors: An Israeli study found an increased risk of 50 to 60 percent for salivary gland tumors among people with highest cell phone use (Sadetzki 2008).

Behavioral problems: A study of 13,159 Danish children showed 80 percent elevated risk for emotional and hyperactivity problems among young children who use cell phones and whose mothers also used cell phones during pregnancy (Divan 2008).

Migraines and vertigo: A study of 420,095 Danish adults showed that long-term cell phone users were 10 to 20 percent more likely to be hospitalized for migraines and vertigo than people who took up cell phones more recently. (Schuz 2009).

Scientists have known for decades that high doses of the radiofrequency radiation emitted by cell phones can penetrate the body, heat tissues, trigger behavioral problems and damage sensitive tissues like the eyeball and testicle (Heynick 2003; IEEE 2006).

Yet when cell phones went on the market in the 1980s, federal regulators did not require manufacturers to prove they were safe (GAO 1994).

Recent studies raise particular concerns about the impact of cell phone emissions on children. The National Research Council (NRC) has observed that "with the rapid advances in technologies and communications utilizing [radiation in the range of cell phone frequencies], children are increasingly exposed... at earlier ages (starting at age 6 or before)" (NRC 2008b). The NRC called for "investigation of the potential effects of RF fields in the development of childhood brain tumor" (NRC 2008b).

- Research by France Telecom scientists showed that under standard conditions of use, twice as much cell phone radiation would penetrate a child's thinner, softer skull than an adult's (Wiat 2008). These results confirm earlier findings that children's heads absorb more radiofrequency radiation than adults (Gandhi 1996; Kang 2002; Wang 2003).
- Children will be exposed to cell phone radiation for more years and therefore in greater total amounts than the current generation of adults (NRC 2008b).

Few research studies have focused on the health hazards of children's cell phone use, even though the youth market is growing. But one recent study of 13,159 Danish children showed that young children who use cell phones and whose mothers also used cell phones during pregnancy are 80 percent more likely to suffer emotional and hyperactivity problems (Divan 2008).

In response to the growing debate over the safety of cell phone emissions, government agencies in Germany, Switzerland, Israel, United Kingdom, France, and Finland and the European Parliament have recommended actions to help consumers reduce exposures to cell phone radiation, especially for young children.

In contrast, the two U.S. federal agencies that regulate cell phones, the Food and Drug Administration (FDA) and the Federal Communication Commission (FCC), have all but ignored evidence that long term cell phone use may be risky.

Government actions: radiation standards and public education

Health agencies in six nations — Switzerland, Germany, Israel, France, United Kingdom, and Finland — have recommended reducing children's exposures to cell phone radiation.

In 2008, the European Parliament passed a resolution urging member countries to develop lower radiation emission limits for cell phones. Legislation introduced in the French Senate would ban marketing and sales of phones for children under age 6.

Brussels, Belgium; Salzburg, Austria; and Christchurch, New Zealand have proposed strict local cell phone radiation standards. Toronto has issued guidance to parents on reducing children's cell phone use.

The FCC adopted radiation standards developed by the cell phone industry 17 years ago. These standards, still in use, allow 20 times more radiation to reach the head than the rest of the body. They do not account for risks to children.

While compiling a database of radiation emitted by more than 1,000 cell phones sold in the U.S., the Environmental Working Group has found that emissions can vary by a factor of up to 8 from one phone to another.

The cell phone industry has reported 270 million wireless subscriptions by the end of 2008, equivalent to 87 percent of the U.S. population (CTIA 2009, ITU 2009). This number is only expected to grow. Consumers need — at a minimum — easy access to cell phone radiation information so that they can make informed purchasing decisions and protect themselves and their families from potential health concerns.

Studies: Cell phone radiation may cause tissue damage

Cell phones communicate via electromagnetic waves. During signal transmission, a comparable amount of radiation travels outward, towards the base station, and inward, towards the ear or head of the cell phone user. (IEGMP 2000).

Cell phone waves are in the “radiofrequency” range. They lack the penetrating energy of X-rays and radioactivity. Scientists are still exploring how cell phone radiation may cause the harmful effects that some studies have described.

Scientific research conducted over the past decade has associated cell phone radiation with increased risk of developing brain and salivary gland tumors, neurological symptoms such as migraine and vertigo, and neurodevelopmental effects observed as behavioral problems in young children (BioInitiative 2007; Divan 2008; Kundi 2009; Sadetzki 2008; Schuz 2009).

Cell phones, radios and TV transmissions emit non-ionizing radiation that has a longer wavelength, lower frequency and lower overall energy per photon than UV light, X-rays and gamma rays (a form of radioactivity), which are known as ionizing radiation because they have enough power to eject an electron from its orbit and leave behind a charged ion that can damage cells and tissues.

The National Research Council has reported that exposure to cell phone radiation may affect the immune, endocrine and nervous systems, fetal development and overall metabolism (NRC 2008b). Children are likely to be more susceptible than adults to effects from cell phone radiation, since the brain of a child is still developing and its nervous tissues absorb a greater portion of incoming radiation compared to that of an adult (Gandhi 1996; Kang 2002; Kheifets 2005; Schuz 2005; Wang 2003; Wiart 2008).

FCC industry radiation standards have little margin of safety

The FCC’s cell phone radiation standards closely follow the recommendations of the Institute of Electrical and Electronics Engineers (IEEE) (FCC 1997). These standards allow 20 times more radiation to penetrate the head than the rest of the body and do not account for risks to children.

FCC standards limit the radiation absorbed by a cell phone user’s brain and body to a specific absorption rate, or SAR, measured by the amount of the phone’s radiation energy (in watts, W) absorbed per kilogram of tissue (W/kg).

Current FCC regulations permit SAR levels of up to 1.6 W/kg for partial body (head) exposure, 0.08 W/kg for whole-body exposure, and 4 W/kg for exposure to the hands, wrists, feet and ankles (FCC 1997, 1999).

The FCC standards are based on animal studies conducted in late 1970s and early 1980s (Osepchuk 2003). FCC, on the recommendation of the IEEE, adopted SAR level of 4 W/kg as the point of departure for determining legal SAR limits for cell phones. In contrast to the FCC decision, an independent analysis by the EPA scientists concluded, on the basis of the same body of data, that biological effects occur at SAR levels of 1 W/kg, 4 times lower than the SAR level chosen by IEEE (U.S. EPA 1984). Exposure to radiofrequency radiation at these SAR levels induces tissue heating that leads to behavioral alterations in mice, rats, and monkeys, that may be a “potentially adverse effect in human beings” (IEEE 2006).

Current FCC standards fail to provide an adequate margin of safety for cell phone radiation exposure and lack a meaningful biological basis.

For example, the FCC standard for the head is just 2.5 times lower than the level that caused behavioral changes in animals. The standard that applies to hands, wrists, feet, and ankles has no safety margin whatsoever.

The FCC adopted IEEE’s proposal to allow 20 times more radiation to the head than the average amount allowed for the whole body, even though the brain may well be one of the most sensitive parts of human body with respect to radiofrequency radiation and should have more protection.

To receive the FCC approval for selling a cell phone in the U.S. market, manufacturers typically conduct the phone’s SAR tests themselves or contract with the private industry. Private industry organizations (Telecommunication Certification Bodies) are also actively involved in all steps of determining the compliance of cell phones and other wireless devices with the FCC rules (FCC OET 2008f).

SAR testing of cell phones is carried out on a mold in the shape of an adult torso or head which is filled with a viscous fluid mixture selected to simulate the electrical properties of human tissue (GAO 2001). To determine SAR, a cell phone is placed next to the outer surface of the mold and turned on to transmit at the maximum power while a probe is inserted into the viscous inner mixture at various locations, measuring the radiofrequency energy that is being absorbed (GAO 2001).

FCC, the cell phone industry, and the academic community all acknowledge that SAR measurements have significant precision problems (Cardis 2008; FCC OET 2008e; GAO 2001; Wiart 2008). Studies by scientists in academia and the cell phone industry demonstrate that SAR is significantly influenced by the age, shape of the head, and tissue composition (Conil 2008; Wang 2003; Wiart 2008).

The greatest debate is whether the current methods for SAR measurement is adequate for assessing radiation absorption in children's brains (Gandhi 1996; Wang 2003). Recent research on SAR in test models for children's brains and bodies indicates that SAR levels in children would be much higher than in adults (Conil 2008; de Salles 2006; Gandhi 1996; Martinez-Burdalo 2004; Wang 2003; Wiart 2008).

Cell phone standards ignore children

Scientists in a number of countries agree that the head and brain of a child absorb significantly more radiation than those of an adult (de Salles 2006; Gandhi 1996; Kang 2002; Wang 2003; Wiart 2008). Yet U.S. cell phone emission levels and federal standards are based on radiation absorbed by adults and fail to account for children's higher exposures and greater health risks.

In general, as head size decreases, the percentage of energy absorbed by the brain increases, (Martinez-Burdalo 2004). Moreover, children's tissues have higher water and ion content compared to adult tissues (Peyman 2009). Both factors increase radiation absorption, according to researchers from the U.S., the Finnish cell phone company Nokia, Institute of Applied Physics in Spain and the U.K. Health Protection Agency (Gandhi 2002; Keshvari 2006; Martinez-Burdalo 2004; Peyman 2009).

All these data, taken together, suggest that when a child uses a cell phone that complies with the FCC standards, he or she could easily absorb an amount of radiation over the maximum allowed radiation limits defined by the federal guidelines. FCC standards give adults only a slim margin of safety over emission levels that harm animals. For children, the margin is much slimmer – if one exists at all.

Consumers have a right to full information on cell phone radiation levels

Cell phone manufacturers opposed SAR disclosure (Lin 2000) until 2000, when the FCC began posting cell phone SAR values on its web site. After the FCC decision, the Cellular Telecommunications Industry Association (CTIA) began requiring manufacturers to disclose cell phone SARs.

According to CTIA guidelines, a mobile phone SAR value must be listed in the user manual or on a separate sheet. The trade association does not require listing the SAR value on the box or the phone itself (Microwave News 2000).

Cell phone radiation levels are rarely available at retail locations. Consequently, consumers cannot easily identify low-radiation phones.

FCC maintains a database of mobile phone SAR values for devices currently on the market, but it is difficult to use. With significant effort, a consumer can navigate the FCC website to find the SAR value for a specific phone.

To search the FCC database, the consumer needs the mobile phone's FCC ID number, located on a sticker underneath the phone's battery. The first three characters of the FCC ID is the Grantee Code; the remaining numbers and letters of the ID are a product code that can be entered into the online FCC ID Search Form (<http://www.fcc.gov/oet/ea/fccid>), to pull up five to seven data entries. Consumers must scroll manually through each of the data entries to locate the document that lists the SAR value for the specific mobile phone.

In contrast to this cumbersome process, the German Federal Office for Radiation Protection (BfS) maintains a detailed, open directory of information on mobile phones available in the German market (BfS 2008b). Such a publicly available database greatly facilitates consumers' access to SAR data, enables informed purchasing decisions and encourages phone manufacturers to offer lower-SAR phones.

Recommendations

The U.S. government should require phones to be labeled with their radiation emissions at the point of sale, so consumers can make informed decisions about the phones they buy.

The cell phone industry should offer consumers phones that operate with the least possible radiation, and should make each phone's radiation emissions available at the point of sale.

Cell phone users can protect themselves and their families by buying low-radiation phones. Look for currently available low-radiation options in the EWG's cell phone radiation buyer's search tool that lists radiation output of more than 1,000 cell phones.

Cell phone users can also reduce exposures by using their phone in speaker mode or with a headset.

And please help us tell the government to update its cell phone standards.

Cell Phone Radiation Science Review

Section 1: Do cell phones cause cancer or other illnesses?

Research on cancer risk in cell phone users

Researchers and public health experts worldwide actively debate if cell phone radiation can lead to brain cancer (American Cancer Society 2008; FDA 2003; Hardell 2009; IARC 2008, 2009b; Kundi 2009). While earlier, short-term studies did not find an increased risk of brain cancer (Ahlbom 2009; Croft 2008; FDA 2003), long-term data published over the last four years found an increased risk of developing two types of brain tumors on the ipsilateral side (the side of the brain on which the cell phone is primarily held) among people who used a cell phone for longer than 10 years (Hardell, Carlberg 2006b; Hours 2007; Lahkola 2007; Lonn 2005; Schoemaker 2005; Schuz, Bohler, Berg 2006; Takebayashi 2008):

- Glioma – a typically malignant tumor of the brain that arises from glial cells that provide physical support for the central nervous system;
- Acoustic neuroma – a benign tumor of the vestibulocochlear nerve that innervates the ear.

Two recent studies also reported increased risk of salivary gland (parotid gland) tumors among cell phone users (Lonn 2006; Sadetzki 2008).

In the late 1990s, the International Agency for Research on Cancer (IARC) developed a multinational case-control study, INTERPHONE, to address strong public concerns about cell phone safety (Cardis 1999). The goal of the INTERPHONE study was to investigate whether the radiofrequency radiation emitted by cell phones is carcinogenic (IARC 2009b). Thirteen countries participated in the project (Australia, Canada, Denmark, Finland, France, Germany, Israel, Italy, Japan, New Zealand, Norway, Sweden and the UK). The study ran from 2000 to 2006, cost 30 million U.S. dollars (Economist 2008) and involved 14,078 study participants, among them 2,765 glioma, 2,425 meningioma, 1,121 acoustic neurinoma, 109 malignant parotid gland tumour cases and 7,658 controls (Cardis 2007).

The publication of final results and conclusions of the entire INTERPHONE study has been delayed for three years since the conclusion of the study (IARC 2009a; Microwave News 2009). Scientists have questioned whether the study design methods were adequate for detecting increased cancer risk, and whether recall biases might have impacted the quality of the data and resultant conclusions (Cardis 2007; Kundi 2009; Vrijheid, Armstrong 2009; Vrijheid, Cardis 2006; Vrijheid, Deltour 2006; Vrijheid, Richardson 2009). Meanwhile, scientists from different international centers have begun to publish their findings independently (Cardis 2007; Lonn 2005; Schlehofer 2007; Schoemaker 2005; Schuz, Bohler, Schlehofer 2006; Takebayashi 2006).

As described in the article published by the Economist in September 2008:

“Delays in releasing the report have been due to “the difficulty of interpreting the findings due to potential biases” and to the “conducting of additional analyses to try and disentangle the potential impacts of selection and recall errors on the risk estimates”. The Interphone researchers are split into three camps. One believes any increased incidence of tumours shown in the study is purely the result of the biases. Another thinks it really has found increased risks of certain tumours and wants to call for precautionary measures. A third group is just keeping quiet. One person who knows many of the scientists, but prefers not to be named, describes the relations between members of the three groups as “strained”—harsh language in the world of scientific research.” (Economist 2008)

The latest update of the INTERPHONE study results, published on October 8, 2008 (IARC 2008), included 6 publications that found some increase in the risk of glioma for long-term cell phone users, especially on the ipsilateral side (Christensen 2005; Hours 2007; Lahkola 2007; Lonn 2005; Schuz, Bohler, Berg 2006). This side of the head absorbs 97-99% of the total electromagnetic energy deposited in the brain during calls (Cardis 2008), which supports the link between cell phone use and ipsilateral brain tumor development. Only two of the INTERPHONE studies did not find an increased glioma risk (Hepworth 2006; Takebayashi 2008). Increased risk

of glioma associated with long-term cell phone use has been also reported by the Hardell group in Sweden (Hardell, Carlberg 2006b; Hardell 2009).

INTERPHONE results for acoustic neuroma are more varied. Of the 7 INTERPHONE reports on acoustic neuroma, 5 publications based on less than 10 years exposure did not detect an increased risk (Christensen 2004; Hours 2007; Klæboe 2007; Schlehofer 2007; Takebayashi 2006). In contrast, two publications that were based on longer than 10-year exposure reported an increased risk of acoustic neuroma (Lonn, Ahlbom 2004; Schoemaker 2005). Similar to glioma, the risk for developing acoustic neuroma appears to be strongest for tumors on the ipsilateral side and long-term exposures (Hardell, Carlberg 2006a; IARC 2008).

A meta-analysis that combined results from all brain tumor studies published to date reported that among people who had used cell phones for more than 10 years, the risk of ipsilateral brain tumor increased by 90% for glioma and 60% for acoustic neuroma (Hardell 2009; Kundi 2009). Some studies have also reported an increased risk of the benign brain tumor meningioma, although the risk appears to be smaller and thus much harder to detect (Hardell 2009; Kundi 2009; Takebayashi 2008). Authors of the study noted that the risk appears to be higher in rural areas where phones typically radiate at higher intensities to allow signals to reach distant transmission towers (Hillert 2006).

While the publication of the final INTERPHONE summary is pending (IARC 2009a), detailed post-study analysis suggested that some of the negative findings may have been related to the study design and methods for determining past personal patterns of cell phone use (Hardell and Hansson Mild 2006; IARC 2008; Vrijheid, Cardis 2006; Vrijheid, Deltour 2006; Vrijheid, Mann 2009; Vrijheid, Richardson 2009). For example, among studies where the observed effects were weak, an increased risk of brain tumor was nevertheless reported for long-term users, users with the largest number of calls, and users with the largest numbers of telephones (Hours 2007; Schoemaker 2009).

Recently, a large-scale, multi-center study in Israel also found an association between salivary (parotid) gland cancer and heavy use of cell phones, especially for rural areas where cell phones typically transmit at higher power (Sadetzki 2008). As reported by the team of Israeli scientists, the anatomic location of the parotid gland just below the ear would make it vulnerable to cell phone radiation exposure. Parotid tumor occurs at a relatively young age (43-55 years of age), so that many current cell phone users may already be at risk for these tumors (Sadetzki 2008).

Researchers found a 48-58% increased risk of salivary gland tumors among people who make the greatest total number of calls or who log the most time on the phone without a hands-free device compared to others in the study group, on the side of the brain on which the cell phone was held (ipsilateral). No increased risk was seen for tumors on the other side of the head (Sadetzki 2008). The Israeli findings are in close agreement with an earlier study conducted in Sweden and Denmark; this study, based on a cohort about 1/3rd the size of the Israeli cohort, observed a 40% increased risk of ipsilateral benign tumors (Lonn 2006).

The fact that scientists have measured increased tumor risk in so many studies of cell phone users is even more powerful given that people have used cell phones widely for only about a decade, while cancer typically requires 15-20 years to develop. It seems likely that studies conducted in future years may find more consistent and higher cancer risks (Ahlbom 2004; Ahlbom 2009; Krewski 2001; Krewski 2007; Kundi 2009; Kundi 2004).

Strikingly, the field of research on the health effects of cell phone use has exhibited the signature pattern of a so-called "funding effect," a biased outcome due to source of funding, observed in studies funded by tobacco companies or the manufacturers of industrial chemicals such as the endocrine disrupting plasticizer BPA (vom Saal 2005). In 2001, the U.S. Government Accountability Office voiced a strong concern about the reliability of results from industry-funded studies conducted without government oversight (GAO 2001). A recent systematic review of the source of funding and results of studies of health effects of cell phone use indicated that studies funded by the cell phone industry were ten times more likely to report no adverse effects compared to studies funded by public agencies or charities (Huss 2007; Huss 2008). Thus, some of the heterogeneity in the earlier literature could be related to the source of funding, whereby research sponsors could influence the design of the study, the nature of the exposure, and the type of outcome assessed.

Cell phones and health effects other than cancer

New lines of research are examining central nervous system diseases other than brain tumors in relation to cell phone use:

- A recent Danish study noted an increased risk for neurological symptoms such as migraine and vertigo for cell phone users (Schuz 2009);
- Scientists have found an increased risk for Alzheimer disease associated with electromagnetic radiation (Huss 2009);
- A study from the University of California, Los Angeles found a correlation between prenatal exposure to cell phone radiation and behavioral problems in children (Divan 2008).
- Six studies from the U.S., Australia, Japan and Europe reported that exposure to cell phone radiation has an adverse effect on sperm counts, motility and vitality (Agarwal 2009; De Iuliis 2009; Eroglu 2006; Fejes 2005; Salama 2009; Yan 2007).

In animal studies, scientists have found that exposure during gestation to radiofrequency radiation like that emitted by cell phones is associated with decreased fetal growth, developmental abnormalities, and death of offspring (BioInitiative 2007; Heynick 2003). In occupational health studies for female physiotherapists, conducted in Sweden, Israel, and Finland, scientists found that workplace exposure to radiofrequency radiation during pregnancy is associated with low birth weight, congenital malformations, fetal death, and spontaneous abortions (Kallen 1982; Lerman 2001; Taskinen 1990).

The key question in the cell phone research field is how radiofrequency radiation like that from cell phones affects biological tissues and cells. Scientists have proposed and explored a number of possible mechanisms:

- A number of studies examined the potential for genotoxicity of electromagnetic fields (harm to genetic material in body cells that can lead to mutations and cancer) (BioInitiative 2007; Phillips 2009). While the evidence is not yet conclusive, one quarter of studies published on this issue found a genotoxic effect from low-level exposures (Vijayalaxmi 2008).
- Scientists have reported that cell phone radiation affects levels of reactive oxygen species (ROS) inside the cell (Irmak 2002; Zmyslony 2004). In turn, higher ROS levels trigger intracellular signaling cascades that interrupt the smooth functioning of the cell. Changes in the activation status of molecules within these signaling cascades can lead to inflammation, heart disease, cancer and other chronic health conditions (Boutros 2008; Muslin 2008; Skaper 2007).
- Cell phone radiation-induced reactive oxygen species may well be the causative agent that induces DNA damage, which is a precursor to cancer (Phillips 2009) and a potential mechanism of toxicity to sperm cells (De Iuliis 2009).
- Radiofrequency radiation has been associated with a change in the activity of white blood cells (Aly 2008).
- Exposure to cell phone radiation has been associated with cell death and activation of intracellular signaling molecules (Lee 2008). There is a vigorous debate in the literature regarding the types of conditions under which radiofrequency radiation would cause cell death (Guney 2007; Nikolova 2005; Palumbo 2008; Zhao 2007).

As described in a recent expert review, "In a living cell, many important processes occur by electron transfer across membrane structures in a well-organized manner, ions cross selective channels, proteins get activated and deactivated by cascades of precisely regulated enzymes" (Kundi 2009). These electronic processes would likely be affected by the electromagnetic fields, leading to altered cellular function, growth, and differentiation (Karinen 2008; Moisesescu 2008; Zareen 2009). While none of these processes individually can be considered equivalent to the development of disease, all of them are associated with chronic adverse health effects and need to be considered in the assessment of radiofrequency radiation impact on biological organisms.

Cell Phone Radiation Science Review

Section 2: Cell Phone Safety Standards

Radiofrequency radiation associated with cell phones

FCC established the first radiation standards for cell phones in 1996, 13 years after cell phones were first marketed in the U.S. The agency adopted limits recommended by industry (IEEE C95.1-1991) that were established to protect against high-dose thermal effects, that allow a 20-fold higher exposure to the head (1.6 W/kg) compared to the rest of the body (0.08 W/kg), and that do not account for a child's higher exposure and greater vulnerability to cell phone radiation.

In the U.S., cell phones operate at electromagnetic wave frequency of either 800-900 megahertz (MHz) or 1800-1900 MHz. This frequency range is called radiofrequency (RF), since radios and TVs operate in the same portion of electromagnetic spectrum. The power density or intensity of transmitted electromagnetic field (EMF) is measured in watts (W) per m² or, more commonly, milliwatts per cm² (mW/cm²).

Cell phone radiation is transmitted by the antenna and the circuit elements inside the handset. The antenna and the circuit elements send out the electromagnetic wave (RF radiation) to transmit the signal. The inner antenna is usually a metal helix or a metal rod a few centimeters long that is able to transmit RF radiation of sufficient power so as to deliver the signal from the handset to the base station. The antenna is typically located on the back of a cell phone or a wireless device. The power at which a cell phone must transmit to reach a base terrestrial station is affected by many factors, such as frequency (900 or 1800 MHz), the phone distance from the base station, and physical obstacles between the phone and the base station. To overcome obstacles and interference, a cell phone transmits at greater power. This power is controlled from the base station.

In a rural area with sparse locations of cell phone towers, cell phones need to transmit signal at a greater power (Hillert 2006). A study in Sweden demonstrated that in the rural area, the highest power level was used about 50% of the time, while the lowest power was used only 3% of the time. The corresponding numbers for the city area were approximately 25% and 22% (Lonn, Forssen 2004). In agreement with these data, rural users of cell phones appear to be at a higher tumor risk compared to urban users, likely due to higher power radiation emitted by a phone when located further away from a base station (Hardell 2005; Sadetzki 2008).

EMF radiation emitted by a cell phone antenna is not very directional – similar amounts of radiation are transmitted outward, towards the base station, and inward, towards the ear/head of a cell phone user where they readily penetrate into the body and are absorbed into the inner tissues (Independent Expert Group on Mobile Phones (IEGMP) 2000). Of note, it is possible to design directional antennas so as to decrease radiation exposure to the cell phone user (Wireless Galaxy 2009). Multiple factors influence how much radiation goes into the head, including: the type of digital signal coding in the network, such as GSM (Global System for Mobile Communication), CDMA (Code division multiple access) or UMTS (Universal Mobile Telecommunication System); the antenna design; location of the antenna relative to the head; and the position of the hand or use of an earpiece (Swiss Federal Office of Public Health 2009c).

Of the total radiation emitted towards the head, most (97–99%, depending on frequency and cell phone network) is absorbed in the brain hemisphere on the side where the phone is used (Cardis 2008). The temporal lobe, an area of the brain involved in auditory processing, formation of long-term memory, as well as some aspects of speech and vision, receives the highest radiation exposure (Cardis 2008). Additionally, when a phone is worn near the waist during its use (as may occur when a corded or a cordless headset is used), much of the outgoing radiation is absorbed by adjacent soft tissues, which may pose health risks (Agarwal 2009; Swiss Federal Office of Public Health 2009c; Whittow 2008).

Absorption of radiofrequency energy involves interaction with polar molecules or ions inside the cells and in extracellular fluids such as cerebrospinal fluid, leading to readily detectable temperature elevation in organs and tissues (ICNIRP 1998; IEEE 2006). The heat generated in tissues absorbing RF energy can cause thermal effects that range from behavioral problems to damage to sensitive tissues like the eyeball or testicle. Researchers have

also suggested non-thermal mechanisms of action for some of the effects seen in studies, including effects on ion channels within a cell, effects on membrane enzymes, creation of membrane pores, and free radical formation; scientists worldwide are actively investigating these possible effects of cell phone radiation (NRC 2008b; Weaver 2006).

Specific absorption rate (SAR) for the cell phone radiation

Biological effects caused by radiofrequency radiation depend on the rate at which the energy is absorbed by a particular mass of tissue, calculated as specific absorption rate, or SAR, and measured in watts per kilogram (W/kg). Since brain structures on the side where a cell phone is used (the ipsilateral side) receive significantly higher dose of radiation, and since radiation is unevenly absorbed into different types of tissues (bone, cartilage, nervous tissue, or distinct anatomical structures within the brain), international experts agree that more precise SAR measurements can be obtained when averaging over a smaller volume of tissue (Cardis 2008).

In general, energy absorption rate increases with greater conductivity of tissue and decreases with greater tissue density. Absorption rate is also directly proportional to the intensity of the electromagnetic field (its power density). To carry out an SAR test, a mold in the shape of human torso or head is filled with a fluid designed to simulate the electrical properties of human tissue. Typically, a head model is filled with a thick, viscous mixture that is meant to simulate the conductivity of head tissues; the mixture includes water, salt, sugar, and a chemical viscosity additive. During testing the phone is placed next to the outer surface of the mold and made to transmit a signal at full power while an inner probe is moved through the fluid mixture, measuring the radiofrequency energy that is being absorbed at various locations (IEC 2005). The certified SAR level of a given phone is supposed to be the highest SAR value measured during those tests.

FCC, the industry, and the academic community all acknowledge that SAR measurements have significant precision problems (Cardis 2008; Conil 2008; FCC OET 2008e; GAO 2001; Wiart 2008). Studies by scientists in academia and the cell phone industry, demonstrated that it is difficult to generalize between the SAR induced in two given heads, for people of different ages or body types (Wiart 2008). Although significant methodological improvements occurred over the last decade, in 2008 FCC reported persisting “issues and concerns in applying these [SAR] procedures correctly” (FCC OET 2008b). Additionally, two modeling studies carried out in Japan demonstrated that the whole body SAR can be substantially higher than the current standard when short subjects are exposed to high-power cell phone radiation (Hirata 2007; Wang 2006).

The current SAR standard may pose especial risk to the health of children (Martinez-Burdalo 2004). Children's tissues have higher numbers of ions compared to adults, resulting in greater conductivity and increased capacity to absorb radiation (Gabriel 2005; Peyman 2009). Children's heads also have smaller thicknesses of the pinna, skin and skull, reducing the distance from the handset to the peripheral brain tissues (Conil 2008; Wiart 2008). These factors result in higher SAR exposure for young children. According to a recent study with SAR testing models designed to correspond to the 5-8 year old child, a child's head would absorb twice the radiation of an adults' (Wiart 2008). Similar results have been reported by the University of Utah researchers in 1996 (Gandhi 1996) and by the researchers from the Nagoya Institute of Technology (Japan) in 2003 (Wang 2003). Due to higher absorption of radiation, when a child uses a high-emitting cell phone, he or she could easily get an exposure over the current FCC limit (Conil 2008).

U.S. SAR standards for cell phones

The FCC limits for cell phone radiation exposure (47CFR 2.1093(d)), based on IEEE recommendations, permit the following SAR levels for whole-body exposure and for partial-body or localized exposure (FCC 1997, 1999):

- Partial-body exposure (head): up to 1.6 W/kg, averaged over 1 g of tissue;
- Whole-body exposure: up to 0.08 W/kg, averaged over 1 g of tissue;
- Hands, wrists, feet, and ankles: up to 4 W/kg, averaged over 10 grams of tissue.

The current SAR standards for radiofrequency radiation were based on animal studies conducted in the late 1970s and early 1980s. These studies demonstrated behavioral alterations, such as disruption of food-motivated

learned behavior, in several animal species, including non-human primates (squirrel monkeys) at an SAR above 4 W/kg (IEEE 2006; Osepchuk 2003). According to the Institute of Electrical and Electronics Engineers (IEEE) International Committee on Electromagnetic Safety, these behavioral changes “may be a potentially adverse effect in human beings” (IEEE 2006).

FCC, on the recommendation of the IEEE, adopted an SAR level of 4 W/kg as the point of departure for determining legal SAR limits for cell phones. In contrast to the FCC position, an independent analysis by the EPA scientists concluded, on the basis of the same body of data, that biological effects occur at SAR levels of 1 W/kg, 4 times lower than the level chosen by IEEE (U.S. EPA 1984). The EPA’s Science Advisory Board reviewed the draft EPA report twice prior to publication. The Science Advisory Board concluded that the report “represents an adequate statement of the current scientific literature and can serve as a scientifically defensible basis for the Agency’s development of radiation protection guidance for use by Federal agencies to limit exposure of the general public to radiofrequency radiation” (SAB 1984).

Based on the EPA analysis, a point of departure at 1 W/kg SAR may well be a more scientifically defensible hazard level that should be used for determining legally acceptable exposure limits. In fact, the EPA scientist in charge of editing the 1984 report, D.F. Cahill, published a peer-reviewed paper where he indicated that SAR of 0.4 W/kg is likely to be a conservative threshold point (Cahill 1983), 10 times lower than the departure point chosen by IEEE. This conclusion is supported by a growing body of studies from researchers world-wide that observe biological effects of cell phone radiation at SAR values significantly below the limits adopted by FCC (reviewed in (BioInitiative 2007; Independent Expert Group on Mobile Phones (IEGMP) 2000)).

Of note, the IEEE-recommended SAR of 4 W/kg as the point of departure for adverse health effects corresponds to short-term exposure and does not take into account long-term or chronic exposure (RFIAWG 1999). Thus, the existing FCC cell phone standard may well be insufficient for protecting human health from potential effects of life-long use, especially for susceptible populations such as young children.

Slim margin of safety provided by the current FCC standards

The FCC standards, adopted from the 1992 IEEE recommendation, are not based on a comprehensive risk assessment and fail to provide a reasonable margin of safety for exposure to cell phone radiation. Assuming a conservative, and likely overestimated departure point for health effects at an SAR value of 4 W/kg, the exposure standard for the head, at 1.6 W/kg, has only a 2.5-fold margin from the level that produced adverse behavioral effects even though it is possibly the most sensitive part of the human body, while exposure to hands, wrists, feet, and ankles at 4 W/kg, has no safety margin whatsoever. Moreover, as discussed above, children aged 5-8 may receive twice higher SAR compared to adults (Wart 2008), so that under the current radiation standards a young child can easily receive a level of radiation exposure at which adverse behavioral effects are observed in animals.

The approach that IEEE/FCC took to the development of the cell phone radiation standard stands in stark contrast to the risk management approach practiced by the Environmental Protection Agency (EPA). According to EPA, protective reference values should be derived in a way that accounts for both the uncertainty and the variability in the data available (U.S. EPA 2008). In this framework, variability refers to heterogeneity or diversity in the human population, such as different exposure frequencies and duration and differences in response such as genetic or age-specific difference in vulnerability to a particular physical, chemical, or biological agent. Further, uncertainty is typically due to a paucity of available information, for example, for extrapolation from animal data to humans, extrapolating from short-term to chronic exposure and lack of information on all health endpoints affected by the exposure (NRC 2008a; U.S. EPA 2002). To account for uncertainty and variability, one of several, generally 10-fold, default factors are used in EPA risk assessments for operationally deriving the reference exposure values from experimental data (U.S. EPA 2009).

The goal of applying the uncertainty/variability factors for developing general population exposure standards is to ensure that an adequate margin exists to protect infants, young children, and other vulnerable populations from harmful exposures. The choice of specific uncertainty factors (UF) depends on the quality of the studies available and the extent of the research database. EPA has developed certain general principles that apply to most risk assessments (U.S. EPA 2002):

- Interspecies UF accounts for different sensitivity between humans and laboratory test species; it generally falls between 3 and 10, but factors more than 10 might also be applied;
- Intraspecies UF accounts for variability in response between different people; this factor is generally set at 10 and needs to be higher so as to specifically protect children;
- Subchronic-to-chronic duration UF is typically set at a default value of 10 whenever the results of a short-term exposure study are used to derive a long-term exposure standard;
- Finally, for certain exposures during the vulnerable period of development, such as exposure of young children to pesticides, an additional safety factor of 10 is used (mandated under Food Quality Protection Act of 1996).

Of note, the development of the IEEE standard did not involve risk assessment and uncertainty factor considerations as applied by the EPA. A statement from a recent review on the history of the standard is very telling: “to account for uncertainties in the data and to increase confidence that the limits are below levels at which adverse effects could occur, somewhat arbitrary safety factors (typically 10-50) are applied to the established threshold” (Osepchuk 2003).

As described by the IEEE 2005 “Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields”, IEEE applies a safety factor of 10 for whole body exposure and adds an additional factor of 5 so as to “recognize public concerns and take into account uncertainties in laboratory data and in exposure assessment” (IEEE 2006). Why a factor of 5 and not 10, the default factor typically used by EPA in cases of uncertainty (U.S. EPA 2002)? According to IEEE, the International Committee on Electromagnetic Safety determined that “an additional factor of 10 was likely excessive and a factor of 2 not sufficiently differentiating from the upper tier” (IEEE 2006). IEEE has argued that even this 5-fold factor may be excessive and unnecessary and that exposure limits for the general population need to be set at the same higher level as for occupationally exposed people in the workplace (IEEE ICES 2002; Microwave News 2001). IEEE based this recommendation on an untested hypothesis that there would be no difference in sensitivity of different population subgroups to electromagnetic radiation (IEEE ICES 2002).

In its assessment, IEEE has sanctioned a 20-fold higher SAR values for the head (1.6 W/kg) than the whole-body exposure (0.08 W/kg). There are no scientific data to support this decision. As indicated in the authoritative assessment from the Radiofrequency Interagency Work Group (RFIAWG), a task force that included the National Institute for Occupational Safety and Health (NIOSH), EPA, FCC, Occupational Safety and Health Administration (OSHA), and the National Telecommunications and Information Administration, the brain may well be the most sensitive part of the human body with respect to radiofrequency radiation, and would require a more and not less protective standard (FDA 2008a; RFIAWG 1999).

Over the past several years, IEEE has been pressuring FCC to further relax the SAR standard for mobile phones, so that greater energy absorption into the head would be legally permitted (IEEE ICES 2002; Li 2006; Lin 2006; Microwave News 2001; Silva 2002). As promoted by the IEEE, the new upper limit for exposure to the head would be 2 W/kg instead of the FCC limit of 1.6 W/kg (IEEE 2006). The new IEEE standard (2006) also proposed to increase allowed SAR levels for the ear (“pinna”) from 1.6 W/kg to 4.0 W/kg, the same as current standards for hands, wrists, feet and ankles (IEEE 2006).

IEEE also proposed to switch to a method of SAR determination that involves averaging absorbed radiation over 10 g of tissue (IEEE 2006), even though it is well known that averaging over a greater volume tends to underestimate the SAR value by a factor of 2-3 (Cardis 2008; Gandhi 2002). Although so far this proposal has not been adopted by the FCC, in the past FCC had a disconcerting track record of accepting IEEE recommendations without peer review by an independent body of scientific experts (GAO 2001; Lin 2006).

U.S. cell phone certification is primarily carried out by private industry organizations

Cell phones certified by FCC for use in the U.S. must be shown to comply with the legal SAR limits. Yet, cell phone manufacturers opposed public SAR disclosure until 2000, when the FCC began posting cell phone SAR values on its web site (Lin 2000). After the FCC decision, the Cellular Telecommunications Industry Association (CTIA) began requiring manufacturers to disclose cell phone SARs.

It takes effort and persistence to locate the radiation emission (SAR) value for a cell phone either on the manufacturer's website or in the FCC database. There is no standard format for SAR disclosure by the manufacturers, so a search can be very time consuming. According to CTIA guidelines, a mobile phone SAR value must be listed in the user manual or on a separate sheet. The trade association does not require listing the SAR value on the box or the phone itself (Microwave News 2000).

The FCC Office of Engineering and Technology (OET) is the main division within the FCC responsible for cell phone certification and oversight of all radiofrequency equipment in general. FCC has several equipment approval programs, all of which involve the use of the private sector to varying degrees, including:

- **Verification** (self-approved by the manufacturer). According to 47CFR 2.902, "Verification is a procedure where the manufacturer makes measurements or takes the necessary steps to insure that the equipment complies with the appropriate technical standards. Submittal of a sample unit or representative data to the Commission demonstrating compliance is not required unless specifically requested by the Commission"
- **Declaration of Conformity** (manufacturer self-approved using an accredited lab). According to 47CFR 2.906, "Declaration of Conformity is a procedure where the responsible party, as defined in Sec. 2.909, makes measurements or takes other necessary steps to ensure that the equipment complies with the appropriate technical standards. Submittal of a sample unit or representative data to the Commission demonstrating compliance is not required unless specifically requested."
- **Certification**. According to 47CFR 2.906, "Certification is an equipment authorization issued by the Commission, based on representations and test data submitted by the applicant".

Certification of a cell phone or any other type of device can be approved by the FCC or a Telecommunication Certification Body (TCB), which is a private industry certification organization. As described in 47CFR 2.960, "The Commission may designate Telecommunication Certification Bodies (TCBs) to approve equipment as required under this part. Certification of equipment by a TCB shall be based on an application with all the information specified in this part. The TCB shall process the application to determine whether the product meets the Commission's requirements and shall issue a written grant of equipment authorization. The grant shall identify the TCB and the source of authority for issuing it."

According to the FCC, "A TCB is a private organization, which is authorized to issue grants, within its scope of designation, for equipment subject to the FCC's certification procedure. Under these rules, a TCB has the authority to review and grant an application for certification to the FCC rules" (FCC OET 2008f). Examples of devices that can receive certification either through the FCC or through a TCB include cell phones; radiofrequency lights; microwave ovens; family radio; telemetry transmitters; walkie talkies (FCC OET 2008c). Of note, the rules for FCC-TCB interaction are not listed in 47CFR. As described by an FCC representative in a conversation with EWG on April 1, 2009, FCC-TCB interaction is a "constantly developing process." Typically, FCC gives new guidelines to TCBs on an ongoing basis, usually in the format of TCB workshops held 2-3 times a year (FCC OET 2005a, b, 2006, 2008a).

Considering the widespread use of cell phones and other wireless communication devices, it is surprising that the vast majority of them do not undergo direct FCC review. FCC has defended the use of the private sector for certification and issuing grants of equipment authorization, stating that in the Agency's opinion, a private certification system allows for rapid adjustment to changing technology with shorter product life cycles; faster product approvals; access to technical expertise and ability to certify equipment; increase in resources performing conformity assessment; efficiencies in designing and approving products in the same geographic location; as well as reduced uncertainty and delay in obtaining certification (FCC OET 2005a). However, multiple issues of oversight, conflict of interest, adequate auditing and public disclosure hamper the transparency of the TCB certifications (GAO 2001).

In the TCB process, the manufacturer, an accredited lab, or a TCB can test the SAR value of a sample phone. A TCB then reviews the mobile phone test data and application for compliance. The application must demonstrate concordance with the FCC limits (47CFR2.1093(d)) for the phone to receive equipment authorization. If the review is favorable, TCB enters the product into the FCC database and FCC issues a so-called "grant of equipment

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June 24, 2009

Khurana V Hardell L Everaert J Bortkiewicz A Carlberg M Ahonen M.
Epidemiological Evidence for a Health Risk from Mobile Phone Base Stations.
Int J Occup Env Health:16- 3, JUL/SEP 2010, p 263-267.

(please excuse cross-postings)

A new study in the International Journal of Occupational Environmental Health reports increased cancer and neurological health risks from cell towers. Vini Khurana (Australia, neurosurgeon) and Lennart Hardell (Sweden, oncologist) have published a summary of ten studies that reported health effects of populations living near cell towers. They found risks for cancer and neurological disease in eight out of ten studies - within 500 meters of the cell antennas.

It is important to remember that not all cell tower antennas are the same, and the RF exposures around them can vary widely. Major macrocell sites can emit 6000 watts or more, and smaller sites can be less than 2000 watts. The distance outward from a cell tower that creates the 'zone of RF impact' needs to be assessed on a site-specific basis.

Abstract

Human populations are increasingly exposed to microwave/radiofrequency (RF) emissions from wireless communication technology, including mobile phones and their base stations. By searching PubMed, we identified a total of 10 epidemiological studies that assessed for putative health effects of mobile phone base stations. Seven of these studies explored the association between base station proximity and neurobehavioral effects and three investigated cancer. We found that eight of the 10 studies reported increased prevalence of adverse neurobehavioral symptoms or cancer in populations living at distances < 500 meters from base stations. None of the studies reported exposure above accepted international guidelines, suggesting that current guidelines may be

inadequate in protecting the health of human populations. We believe

that comprehensive epidemiological studies of longterm mobile phone base station exposure are urgently required to more definitively understand its health impact.

Key words: base stations; electromagnetic field (EMF); epidemiology; health effects; mobile phone; radiofrequency (RF); electromagnetic radiation.

The paper cites the BioInitiative Report findings and conclusions on the inadequacy of existing public health standards for cell tower radiation, and supports the BioInitiative Report recommendation (of 0.1 microwatt per centimeter squared) by citing new publications on cell tower risks.

"In August 2007, an international working group of scientists, researchers, and public health policy professionals (the BioInitiative Working Group) released its report on EMF and health.²¹ It raised evidence-based concerns about the safety of existing public limits that regulate how much EMF is allowable from power lines, cellular phones, base stations, and many other sources of EMF exposure in daily life. The BioInitiative Report²¹ provided

detailed scientific information on health impacts when people were exposed to electromagnetic radiation hundreds or even thousands of times below limits currently established by the FCC and International Commission for Non-Ionizing Radiation Protection in Europe (ICNIRP). The authors reviewed more than 2000 scientific studies and reviews, and have concluded that: (1) the existing public safety limits are inadequate to protect public health; and (2) from a public health policy standpoint, new public safety limits and limits on further deployment of risky technologies are warranted based on the total weight of evidence.²¹ A precautionary limit of 1 mW/m² (0.1 microW/cm² or 0.614 V/m) was suggested in

Section

17 of the BioInitiative Report to be adopted for outdoor, cumulative RF exposure.21 This limit is a cautious approximation based on the results of several human RF-EMF studies in which no substantial adverse effects on well being were found at low exposures akin to power densities of less than 0.5 – 1 mW/m².2,5,22–26 RF-EMF exposure at distances > 500 m from the types of mobile phone base stations reviewed herein should fall below the precautionary limit of 0.614 V/m."

References:

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For distribution:

Hello Everyone,

As some of you already know, there are several students in Mountain View School in Collingwood, Ontario (Canada) who are complaining about ill health after the school installed WiFi. Rodney, a concerned father, invited me to give a talk in the Community this past week and the room was packed with parents, health care professionals, people from the community, and the media so I hope it will generate more interest once the articles begin to appear.

See video clip of interviews with some of the students at the school. [HYPERLINK](#)

["http://www.youtube.com/watch?v=h-](http://www.youtube.com/watch?v=h-TJXRc5fzo)

[TJXRc5fzo&feature=player_embedded"](http://www.youtube.com/watch?v=h-TJXRc5fzo&feature=player_embedded)[http://www.youtube.com/watch?v=h-](http://www.youtube.com/watch?v=h-TJXRc5fzo&feature=player_embedded)

[TJXRc5fzo&feature=player_embedded](http://www.youtube.com/watch?v=h-TJXRc5fzo&feature=player_embedded)

See video documenting tachycardia in adults during provocation with a cordless (DECT) phone.

[HYPERLINK](#)

"http://www.youtube.com/watch?v= EI9fZX4iww" "http://www.youtube.com/watch?v= EI9fZX4iww"

What is disturbing is that several students have complained about ill health, two students are now on heart medication and one young girl is scheduled for heart surgery on Monday June 14th. A student in a Toronto school (also with WiFi) fainted while standing in the hallway near a WiFi antenna. The students with heart conditions have been diagnosed with one of the following: vaso vagal syndrome, supraventricular tachycardia (SVT), or Wolff-Parkinson-White (WPW) Syndrome (abnormal connections or accessory pathways in the heart) a form of atrioventricular reciprocating tachycardia (AVRT).

Symptoms for SVT include: dizziness, shortness of breath, chest pain, a pounding sensation in the throat or neck, weakness, fatigue, lightheadedness, fainting (especially in the case of underlying heart disease) and resemble EHS symptoms.

Prevalence rate for tachycardia is about 1.6% to 2% for adults. HYPERLINK

"http://www.wrongdiagnosis.com/t/tachycardia/stats.htm" "http://www.wrongdiagnosis.com/t/tachycardia/stats.htm"

Prevalence for WPW is 0.15% in children. See: HYPERLINK

"http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2363719/" "http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2363719/ Epidemiology of Arrhythmias in Children, by R Prem Sekar. Indian Pacing Electrophysiol J. 2008 Apr-Jun; 8(Suppl. 1): S8-S13."

I recently heard that all the schools in my district (Kawartha Pine Ridge) are going to have WiFi installed soon. Where are these schools getting information that this technology is safe? I find this situation most disturbing. If these heart conditions are related to WiFi then I think the schools and those who make the statement that this radiation is safe (Health Canada and local Health Boards) are culpable.

Have received emails from several of the people who attended the presentation this past week and learned that some parents are also having heart palpitations and rapid heart rate because of WiFi in the home. They didn't know this was contributing to their heart problems and have, since the talk, disconnected their wireless devices.

Why are doctors not better informed? Anyone who suddenly experiences a heart irregularity should be asked some specific questions about whether or not they have wireless routers, cordless phones, energy efficient CFL bulbs, nearby cell towers, etc. as routine questioning. The heart problem (arrhythmia or tachycardia), which can be easily measured, may be a very important test for those who are EHS. Please spread the word and ask your friends if they experience symptoms of an irregular or racing heart and if they do ask them when it started, what changed at that time, if it is occasional-when they experience it and what they are doing about it. The more information we can gather the more impact it is going to have on school boards. Getting rid of WiFi is more difficult than preventing it from being allowed into a school in the first place.

Please distribute this email to your friends and let's get a better understanding as to how widespread this heart problem is and the degree to which it relates to wireless technology and electrosmog exposure.

Thanks for your help,

-magda

There is strength in numbers!

I am attaching and posting below our July 11, 2010 Telecommunication Taskforce Update.

Hundreds of residents came out to voice their concerns about the recent proposals to install T-Mobile antennae and/or towers at the North Merrick Library, North Bellmore Fire Department and the Farmingdale-Wantagh Jewish Center. And the MOMS of Merrick and Bellmore are really kicking up steam at school board and civic meetings. But I'd like to give special thanks to Legislator Dave Denenberg – who has been the people's advocate in the fight against cell towers near our homes and schools and a proponent for finding better locations. As the common thread among all the communities, I believe we need to work with Leg. Denenberg's office and unite to form one strong voice against the inundation of wireless telecommunication installations in all our communities.

I would also like to thank the Town of Hempstead for writing new code to address these concerns and Senator Fuschillo for looking into better locations on state property. We are very lucky to live in communities that have representatives like Legislator Denenberg and Fuschillo looking out for the best interests of the people. I am happy to see our state,

county and town government working together in a bi-partisan manner to address this problem.

And with the history and experience of the North Bellmore residents; the passion and determination of Pam Naughton and Lori Stehl and public relation skills of Jeanine Stehl of Wantagh; the perseverance and commitment of Jodi Turk and Sharon Curry who founded MOMs; Attorney Andrew Campanelli, who is giving his time and experience to fight these cell towers; the members of the Taskforce, which include Joe Baker from the South Merrick Community Civic Association, Ira Harris from the East Bay Civic Association and the people who have been putting in hours of their time; and the public outcry from the Wantagh, North Bellmore and North Merrick communities over the new cell towers – I believe we are really a force to be reckoned with. A united community can accomplish anything!!

Please review the attached update that is also posted below and look out for more emails in the next few days. We will need to meet to stop the new cell towers from being installed.

Telecommunication Taskforce Update

July 12, 2010

By Claudia Borecky

It is over a year since the invasion of cellular antennas on utility poles in Merrick and we find ourselves in the same position that we were in then. The cellular antennas are still there; the Town of Hempstead should still be held accountable for not protecting its citizens; and we are still in a position where we could negotiate their relocation. Only now, we have new companies proposing to erect cell towers at our libraries, synagogues and fire houses. Swift action must be taken to prevent these new towers from being erected.

There are three locations where T-Mobile is proposing to install different types of wireless telecommunication equipment:

1. North Merrick Library

North Merrick Library Director Tom Witt advised the North Merrick Community Association (“NMCA”) of T-Mobile’s proposal to erect a 50’ flagpole cell tower to replace the old rusted flagpole that stands in front of the North Merrick Library. He invited T-Mobile representatives to the NMCA’s June 21 meeting to discuss their proposal. Several people expressed their outrage at the thought of a cell tower at a library. I questioned whether T-Mobile would consider installing the tower only a short distance away on the Meadowbrook Parkway. T-Mobile rep Tom Erwin said that it was an arduous process to deal with the state’s regulations. I called and wrote Senator Fuschillo and Assemblyman McKevit requesting that they investigate these applications and see if state property along the highways might be better locations for cell towers than near our homes, schools and libraries.

Senator Fuschillo opposes this cell tower and is requesting Crown Communication (the company contracted to manage wireless telecommunication equipment along the state highways) to provide us with its procedure for approving cell tower installations. **With Senator Fuschillo’s help, I am hopeful that not only will we be able to find a better location for the North Merrick Library site, but for the Farmingdale-Wantagh Jewish Center site as well.**

If we install cell towers along the highways, it is my hope that these larger poles will

cover larger areas and we will be able to take down the cell antennas that are on nearby utility poles and place them on these poles.

If you are interested in reading my opinion piece on this cell tower, please go to **HYPERLINK "<http://merrick.patch.com/articles/borecky-who-wants-to-pledge-allegiance-to-a-cell-tower>"****<http://merrick.patch.com/articles/borecky-who-wants-to-pledge-allegiance-to-a-cell-tower>**.

2. North Bellmore Fire Department at Newbridge Road and Columbus Avenue

A hearing is scheduled by T-Mobile at the Town Board of Zoning Appeals (BZA) for Wednesday, July 14 to hear T-Mobile's request to install six wireless communication antennas concealed inside a proposed 100-foot high monopole and equipment cabinets on the ground at 847 Newbridge Road, on land owned by the North Bellmore Fire Department, Engine Company #2 location, at Columbus Avenue, across from East Meadow Avenue.

On June 30, 2010 the North Bellmore Fire Dept. held a meeting to give the residents a chance to voice their concerns regarding this cell tower. Angry residents demanded that they find a better location. T-Mobile representatives did not show. Senior Deputy Town Attorney Charles Kovit said that their consultant will look over to see if T-Mobile did everything it could to find a better location for this tower.

I met with Leg. Denenberg and some North Bellmore residents who are opposing this tower and discussed uniting to fight the three T-Mobile cell tower locations. There are strength in numbers and with the help of Leg. Denenberg, we will organize a united front to fight these T-Mobile applications.

Leg. Denenberg is requesting an adjournment of that hearing and will send a representative to the BZA to make sure that it is adjourned.

3. Farmingdale-Wantagh Jewish Center

On the same date as the hearing for the North Bellmore Fire Department cell tower site, the BZA is also scheduled to hear T-Mobile's request to install six antennae on the outside of the Farmingdale-Wantagh Jewish Center's chimney, **3710 Woodbine Avenue, Wantagh, NY** which stands at approximately 35' tall.

T-Mobile representatives held a meeting at the Wantagh Knights of Columbus on Wednesday, July 8, 2010. Pam Naughton, Jeanine Boiko and Lori Stehl spread the word throughout the neighborhood. Approximately 150 angry Wantagh residents attended that meeting to protest these proposed cell antennae. This drew TV media attention with News 10/55 and News 12 interviewing Wantagh residents, Leg. Denenberg and me at the Knights of Columbus meeting and at a prior meeting the week before at a resident's home where 50 people attended.

The Wantagh residents also feel that we need to unite. **The Telecommunication Taskforce is working with Leg. Denenberg, the Wantagh, North Bellmore and North Merrick residents and the MOMS of Merrick and Bellmore to fight these proposed cell towers.**

Town of Hempstead

One of the main objectives of the Telecommunication Taskforce ("Taskforce") is to prevent the inundation of wireless telecommunication equipment in the Town of Hempstead ("Town"). At the Taskforce's first meeting in early March 2010, it was decided that we would again sit down with the Town and work with them in establishing code that would prevent the future proliferation of cell antennae. After several

conversations that both Joe Baker, President of the South Merrick Community Civic Association ("SMCCA"), and I had with Attorney Kovit, we were advised that the town is retaining a consultant to write its code. On behalf of the Taskforce, I submitted provisions that we would like to see adopted in the new ordinance.

At about the same time, Jodi Turk and Sharon Curry formed MOMS ("Moms of Merrick") to fight the cell antennae near the Merrick schools. They then retained Attorney Andrew Campanelli, an attorney who had instituted a suit in Bayville against cell antennae that were installed on top of a water tower near a school. Attorney Campanelli has also opened conversation with the Town and will have input into the Town's wireless telecommunication code.

Legislator Denenberg suggests we urge the Town to establish a moratorium of the approval of permits for the installation of cell towers and antenna. This is an urgent matter that demands our immediate attention. We must prevent these new applications for cell towers from being approved.

New York State

Attorney Campanelli is looking into NextG's status as a public utility and is working toward getting the cell antenna off the utility poles in front of people's homes and schools.

The Taskforce is working with Senator Fuschillo to seek alternate sites for the cell towers and antennae. Another Taskforce objective is to work with the state legislature in revising legislation that restricts local control of wireless telecommunication installations and examining the criteria for public utility designation. We FOILED for documentation that will help us fight the cell phone companies.

U.S. Government

The Telecommunication Act of 1996 prohibits the denial of wireless telecommunication equipment due to health risks associated from radio frequency emissions if it falls within federal standards. This act clearly protects cell phone companies from being sued for claims of illnesses or deaths. However, it does not say that you cannot deny applications based on other reasons, such as reduction of property values.

In any event, as new studies have been conducted with data the Taskforce will ask our U.S. Congressmen and Senators to revisit the Act to protect its citizens, instead of its cell phone companies. I've mentioned this to both Senator Schumer and Congresswoman McCarthy and hope to work with our representatives, asking them to introduce legislation to revise the Act.

I am deeply moved by the compassion and understanding that the people of our communities are showing toward their neighbors who have these cell antennas right outside their children's bedroom windows, just feet away from their children's schools and dangerously lurking outside homes of people who have health concerns. Whether it is a line or two, a signature on a petition online or on paper, or actively volunteering their time and energies in pursuing this fight, it is truly commendable that a community is coming out in support of its neighbors and a testament to what can be accomplished when a community stands united.

"Never doubt that a small group of thoughtful, committed, citizens can change the world.

Indeed, it is the only thing that ever has." — [HYPERLINK](#)

["http://www.goodreads.com/author/show/61107.Margaret_Mead"](http://www.goodreads.com/author/show/61107.Margaret_Mead) Margaret Mead

To learn more about the history of cell antennas in Merrick, to examine pertinent

documentation, or if you are interested in learning more about the Taskforce, please visit [HYPERLINK](#) "<http://www.northmerrickcivic.com/>" www.northmerrickcivic.com or call Claudia Borecky at 516-972-6988.

Please also visit the MOMs site at [HYPERLINK](#) "<http://www.dontcellout.com/>" www.dontcellout.com to get the scoop on what communities are doing to fight this intrusion of wireless telecommunication equipment.

Claudia Borecky Telecommunication Taskforce 972-6988

from Talal (filmmaker)

It's been a while since we updated you with the news of Full Signal, and that certainly hasn't been for lack of activity.

The Wireless industry has been in a flurry ever since the Interphone Study (which they sponsored 50% of) cast even more doubt into the safety of wireless technologies.

They were even more shocked when San Francisco passed legislation to make Standard Absorption Rate information more prominent for people buying cellphones.

Since we last wrote, Full Signal was shown to Congressional Staff in Washington, DC, it was a finalist at the Anasy Documentary Awards in Abu Dhabi, and we have had several community screenings.

We have kept up our media campaign in outlets such as the Huffington Post, etc.

The awareness campaign continues!

For us, Full Signal has turned over a new leaf. One that many of you have been waiting for: the release of Full Signal on DVD!

What makes things even more exciting is that since making the DVD announcement a couple of weeks ago on our [HYPERLINK](#) "http://www.facebook.com/pages/Full-Signal/172006015778?v=app_4949752878&ref=search" Facebook Page, we have literally sold hundreds of DVDs, and are already manufacturing more!

You can buy the Director's Cut DVD by going to FullSignalMovie.com and clicking the [HYPERLINK](#) "<http://dvd.fullsignalmovie.com/catalog>" DVD Tab or by linking through this e-mail.

Once there you will find 5 different products:

Americas DVD. This DVD is NTSC format and although it is meant to be played on the American continents, we have not limited its region playability. This DVD comes with 3 languages built into it: English, French and Spanish (including full English subtitles for the hearing impaired).

Worldwide DVD: This DVD is meant to be played everywhere else in the world. This is a PAL DVD and is not restricted to any one region. In addition to the languages above, we have added Arabic, German, Italian, and Swedish to this version [thanks in no small part to the diligence and hard work of some very dedicated volunteers!]

While the Americas DVD is already being shipped, we are currently taking advanced orders for the Worldwide DVD (which will begin shipping next month).

There are some great volume discounts (so if you and your friends want copies buy them

together). There are also one-off offers that we will post on our Facebook Page under the DVD Tab.

The 3rd option under the "Home DVD" section is the Awareness DVD. This is exactly the same DVD you would buy to watch at home, but is intended to be used to raise the awareness of politicians, the media, etc. We're offering it at a 40% discount off the price of the regular DVD, because after all this why we made the film (the one condition is that we mail it directly to the politician/media outlet in question).

We have also facilitated the screening option by including 2 different screening fees depending on the size of the audience. We just had a successful test of this system last Friday with a screening in Calgary (Canada) attended by about 75 people.

So at this point, I want to thank all the volunteers for the countless hours they put in to making this DVD possible. And I also want to thank all those who have purchased copies of the DVD so far.

For those of you on Facebook who have seen the DVD, please be so kind as to write a review by clicking on the review tab.

Our very best to all of you!

Talal Jabari

Talal Jabari

Director

Full Signal (2009)

"AUDIENCE AWARD" 4th Gasparilla International Film Festival, Tampa, FL

"AWARD of MERIT" Accolade Competition 2010

"BEST DOCUMENTARY" 5th Myrtle Beach International Film Festival

"FINALIST" 2nd Anasy Documentary Awards, Abu Dhabi, United Arab Emirates

"OFFICIAL SELECTION" 15th Vilnius International Film Festival, Vilnius, Lithuania

"OFFICIAL SELECTION" 7th Big Sky Documentary Film Festival, Missoula MT

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